

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YUCHUN WANG, RAJEEV BAJAJ
and FRED C. REDEKER

Appeal 2006-3166
Application 09/843,582
Technology Center 3700

Decided: March 8, 2007

Before BRADLEY R. GARRIS, JEFFREY T. SMITH, and
CATHERINE Q. TIMM, *Administrative Patent Judges*.
GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the final rejection of claims 14, 19, and 20. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

Appellants invented a scrubber or brush apparatus for removing metallic particles from the surface of semiconductor substrates after chemical mechanical polishing of the substrates (Specification 1). The

scrubber or brush has complexing agents coupled to the surface of the scrubber or brush to “pick up” metal ions or metal oxides without etching the metal lines on the substrate (Specification 2). The complexing agents may be chemically grafted on the brush, physically blended with the brush materials, or the brush may be made of a homogeneous complexing polymer (Specification 2).

Claims 14, 19 and 20, the only claims on appeal, are illustrative:

14. A brush apparatus comprising:
 - a scrubber brush having:
 - a surface adapted to contact a surface of a substrate to be scrubbed; and
 - a complexing agent coupled to the scrubber brush surface, the complexing agent adapted to chemically bond to metal particles.
19. An apparatus comprising:
 - a scrubber brush comprised of a homogeneous material comprising a complexing agent adapted to chemically bond to metal particles, and having a surface adapted to contact a surface of a substrate to be scrubbed.
20. A scrubber comprising:
 - a substrate support adapted to support a substrate;
 - a brush coupled so as to contact a substrate supported by the substrate support, the brush having:
 - a surface adapted to contact a surface of a substrate to be scrubbed; and
 - a complexing agent coupled to the brush surface, the complexing agent adapted to chemically bond to metal particles; and
 - a mechanism adapted to generate relative movement between the substrate and the brush.

The Examiner relies on the following prior art reference as evidence of unpatentability:

Andros US 5,844,030 Dec. 1, 1998

The rejection as presented by the Examiner is as follows:

1. Claims 14, 19, and 20 are rejected under 35 U.S.C. § 102(b) as unpatentable over Andros.

Appellants contend that Andros does not disclose a brush that includes a “complexing agent adapted to chemically bond to metal particles” as recited by each of the claims on appeal (Br. 3). The Examiner contends that Andros discloses a brush having a complexing agent for chemically bonding metal particles (Answer 3-5).

We AFFIRM.

ISSUE

Whether Andros discloses a brush or scrubber having a “complexing agent adapted to chemically bond to metal particles” as required by claims 14, 19, and 20.

FINDINGS OF FACT

Appellants invented a scrubber brush or pad having a reactive surface for contacting a substrate to remove metal particles therefrom (Specification 2: 7-25; 3: 27-29).

The reactive surface of the brush or scrubber may comprise a complexing agent such as a chelating reagent (Specification 3: 30-31).

The complexing agent “reacts” with the metal particles to remove them from the surface of the substrate (Specification 3: 30-33; 4: 1-2).

Appellants describe how the complexing agent “reacts” with the metal particles using the following terms: “bond,” “to complex,” and “bonded” (Specification 2: 19; 5: 9-10; 6: 3, 14).

Appellants indicate the pad includes “the chemistry needed for metal removal” (Specification 5: 22-23).

The complexing agent may be bonded, grafted, or blended onto conventional polymer scrubber brushes (Specification 4: 28-30).

Appellants have not defined the claim term “chemically bond” in their Specification.

Andros discloses an ionic sponge material for removing particles and other surface contaminants from semiconductor wafers (col. 1, ll. 8-19).

Andros’ sponge brush operates by using a cationic radical to attract and retain particles in the sponge material thereby removing the particles from the surface (col. 7, ll. 38-41).

The particles and surface contaminants removed by Andros’ brush include metal ions such as nickel, copper, palladium, and platinum group metals (col. 12, ll. 62-65).

Andros discloses using polyvinylalcohol (PVA) as the material to construct the sponge (col. 11, ll. 1-5).

Andros uses the PVA material as a “host” to carry a charged “guest” such as polyethylenimine (col. 10, ll. 43-49; col. 11, ll. 1-5).

The host sponge containing the polyethylenimine scavenges heavy metals (col. 11, ll. 23-27).

After the polyethylenimine has become saturated with charged particles, it may be either induced to leave the host (i.e., PVA) by changes in

the environment, or to release the material (i.e., heavy metals) without leaving the host (col. 11, ll. 7-15).

Andros discloses that the ionic sponge material acts as a chelating agent in removing the nickel, copper, palladium, and platinum group metals (col. 12, ll. 60-65).

PRINCIPLES OF LAW

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. Inc. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). When a claim covers several structures or compositions, either generically or as alternatives, the claim is anticipated if any of the structures or compositions within the scope of the claim is known in the prior art. *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001).

Claims are given their broadest reasonable interpretation in light of the specification as it would be interpreted by one of ordinary skill in the art. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316, 75 USPQ2d 1321, 1329 (Fed. Cir. 2005). However, an applicant may be his own lexicographer by providing a special definition to a claim term that differs from the meaning it would otherwise possess. *Id.* In such circumstances, applicant's special definition would govern the meaning of the particular claim term. *Id.*

ANALYSIS

In order to determine whether Andros discloses a complexing agent that "chemically bond[s]" to metal particles, we must first construe the claim

term “chemically bond.” Appellants have not provided a special definition of “chemically bond” in their Specification which would govern our construction of that claim term. Since “chemically bond” is not restricted by a definition provided by Appellants, the Examiner reasonably interpreted “chemically bond” to include the metal scavenging capability of the “cationic PVA and host PVA” disclosed by Andros. *Phillips*, 415 F.3d at 1316, 75 USPQ2d at 1329.

As evidence that the Examiner’s interpretation of “chemically bond” is reasonable, we find Appellants disclose the complexing agent may be a chelating reagent (Specification 3: 30-31) and Andros discloses the host PVA and cationic PVA act as chelating agents in removing the metal particles (col. 12, ll. 58-60). These disclosures reveal that Andros’ binding of the metal particles with the cationic or host PVA removes the metal particles (i.e., bonding them to the cationic or host PVA) in the same fashion as Appellants’ chelating reagent, complexing agent. Therefore, the Examiner reasonably determined that Andros’ cationic and host PVA “chemically bond” the metal particles to remove them from the substrate surface as claimed by Appellants.

Accordingly, we find that Andros discloses a complexing agent (i.e., polyethylenimine) that “chemically bond[s]” to metal particles. Since Appellants’ only argued distinction is disclosed by Andros, we sustain the Examiner’s anticipation rejection.

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CONCLUSION OF LAW

We find Andros discloses an ionic sponge having a complexing agent that “chemically bond[s]” to metal particles.

DECISION

The Examiner’s rejection of claims 14, 19, and 20 under § 102(b) over Andros is AFFIRMED.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2006).

AFFIRMED

clj

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